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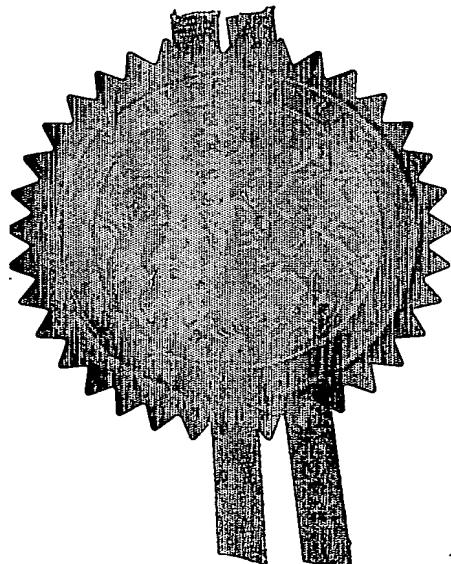
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System and Method for a Secure Programmable Communicator

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SYSTEM & METHOD FOR A SECURE PROGRAMMABLE COMMUNICATOR

DESCRIPTION

5

BACKGROUND OF THE INVENTION

The invention relates to a system and method for a secure
10 programmable communicator. More particularly, it relates to a system and
method for a new and improved wireless communications platform
enclosure, which enables a communications means to be securely attached
to an article of clothing, or to a rucksack, or to a rigid structure such as
15 bicycle or inventory casing, as well as providing a plug-in
telecommunications capability to a games console.

In one embodiment, the said system and method for a secure
programmable communicator comprises an enclosing structure with a
movable arm, which can open and lock closed around a device to which it is
20 to be securely attached such that it embodies the essential design of a
climber's carabiner safety clip. The locking mechanism of the clip is fully
integrated with the electronic control circuitry of the wireless platform and
may be mechanically or electromechanically controlled. Encoded mobile
25 telecommunications messages may be used to securely lock the carabiner
clip locking-arm such that only authenticated messages from authorised
persons may enable the clip to be unlocked. In a locked state, the integrity
of the locking mechanism is supervised by a processing function running on
the wireless platform, such that any unauthorised opening of the clip is
immediately reported to a remote fixed or wireless device and an alarm may
30 be triggered.

In different embodiments, the platform comprises a display and a
memory containing a library of emoticon image elements, which can be
exchanged by telecommunications messages and or by infrared light thereby
35 providing the means to personalise the display and to share emoticons with
similar devices.

The invention relates to and significantly improves upon certain features of two previously filed patent applications claiming Finnish priority, namely the application filed on September 9th 1997 entitled Emergency Mobile Radio Telephone with Reduced Key Set, published as 5 international patent application WO 99/13629 A2, and the application filed on 23rd May 2000 entitled Programmable Communicator published as international patent application WO 01/91428 A2.

In the application entitled Emergency Mobile Radio Telephone with 10 Reduced Key Set, published as WO 99/13629 A2, is taught the invention of using a mobile phone comprising a programmable identity module such as a SIM card, in the context of the GSM telecommunications standard, to program remotely the number of any mobile or fixed telephone to which the 15 communicator, comprising the same type of programmable identity module, is to be linked.

The current invention builds upon the teaching of this earlier application and extends the concept significantly to incorporate an innovative means to attach the reduced key set communication device to a 20 rucksack, to an article of clothing, or to a games console. In addition, the invention teaches a new way of activating the device, linking the billing of the device to an existing mobile phone subscription.

In the application entitled Programmable Communicator, published as 25 WO 01/91428 A2, is taught the invention of an improved wireless telecommunications platform for remote monitoring purposes which can be programmed remotely by a mobile phone or any type of Personal Data Assistant, either at close range using Blue Tooth, or infra red light, or via a mobile telecommunications network connection.

30 The current invention builds upon the teaching of this earlier application and extends the concept significantly to incorporate an innovative means to attach a wireless device securely to a rigid or flexible structure.

Today, the mobile telecommunications industry is making a transition towards high bandwidth high capacity 3rd Generation wireless networks. The associated costs of the 3rd Generation wireless network infrastructure and the lack of market drivers are challenging the growth of the mobile industry. Clearly, a diverse range of mobile services is required which can offer a high growth of subscription contracts and which can also run efficiently and effectively on today's 2nd Generation telecommunications infrastructure. The system and method according to the present invention is directed towards this requirement area.

10

The mobile phone industry is driven by brand image and fashion, yet the industry lacks a stylish design for a mobile phone, which is convenient and attractive for younger persons to use. The current invention is particularly directed towards creating a mobile communicator in the form of a sports icon as well as providing a rugged protection case for the device. In addition, in a separate embodiment, the current invention addresses the fashion issue and sports applications arena through the teaching of a means to attach the communications platform as a module directly to fabric for sports applications and recreational clubbing, where a mobile phone is desired, but as a separate item, it is inconvenient to carry.

In other areas, it is beneficial to attach a wireless platform securely to an existing structure such as a utility meter, or to the frame of a bicycle. The current invention is also particularly directed to address this requirement. In general, wherever there is a need to attach a wireless platform such as for remote tracking of inventory, it is beneficial if the said platform possesses the capability for locking it securely to the external casing surrounding the inventory, or to a prepared attachment mount, which is integral with the outer surface of the external casing.

30

In the application area of rail freight and road freight transportation, there exists the need for an electronic wireless device, which may use any form of wireless communication means, and which comprises extended battery duty cycle capability, which may be attached securely to a container enclosing perishable produce such that it provides a safe and secure means for monitoring the location and or state of the produce such as the internal temperature of the container.

In the area of child security and in order to provide a simple and secure means of communication for children, a solution is needed to provide a system and method to enable a child communicator device to register itself automatically to an existing mobile phone subscription. Such a solution 5 would enable off-the-shelf purchases of a child communicator to be made in high street shops and provide immediate plug-and-play capability by bringing the device on-line within an active mobile phone subscription. Such a capability would drive increased mobile phone subscriptions.

10 In the application areas outlined above, such as for attaching a wireless communications module to an article of clothing, or to a device to be monitored, an improved rugged design is required which both protects the cell phone engine and battery and which looks stylish. For example, in the application area of youth security, children are often reluctant to wear the 15 device unless its shape and form has a positive association with an icon of fashion or an extreme sport such as mountaineering. The shape and form of the wireless module is designed to address this image aspect directly.

20 In the separate application area of electronic games such as the Nintendo Gameboy which comprises the capability for accepting games in the form of a plug-in module, such game consoles could be improved if they could comprise a wireless telecommunications capability and a GPS 25 capability either securely locked to the console or made in the same shape and form as the plug-in games module. In this way the console would become capable of communicating via voice and or data with one or more similar devices and provide the basis for location dependent game creations.

30 Further to these limitations of existing technologies, and so far as is known, no system and method for a secure programmable communicator is presently available which is directed towards the specific needs of this problem area as outlined.

OBJECTS OF THE INVENTION

Accordingly, it is an object of the present invention to provide an improved secure wireless communications platform, which comprises the 5 means to attach itself securely to an article of clothing, or to a rucksack, or to a fixed structure such as to the frame of a bicycle or to an inventory casing.

It is a further object of the present invention to provide an improved 10 secure wireless communications platform, which in one embodiment comprises an enclosing structure with a movable arm, which can open and lock closed around a device to which it is to be securely attached.

It is a further object of the present invention to provide an improved 15 secure wireless communications platform, which in one embodiment comprises an enclosing structure with a movable arm such that the enclosing structure comprises an empty void around which the arm closes.

It is a further object of the present invention to provide an improved 20 secure wireless communications platform, which in one embodiment comprises an enclosing structure with a movable arm, which can open and lock closed around a device to which it is to be securely attached wherein the enclosing structure further comprises a compartment to enclose the said wireless communications platform.

It is a further object of the present invention to provide an improved 25 secure wireless communications platform, which in one embodiment comprises an enclosing structure with a movable arm, which can open and lock closed around a device to which it is to be securely attached wherein the enclosing structure further comprises the battery for the wireless communications platform.

It is a further object of the present invention to provide an improved 35 secure wireless communications platform, which comprises an enclosing structure with a movable arm, which can open and lock closed around a device to which it is to be securely attached such that in one embodiment it essentially comprises the shape and form of a climber's carabiner safety clip.

It is a further object of the present invention to provide an improved secure wireless communications platform, which comprises an enclosing structure moulded in the form of a movable clamp, which can open and lock closed around a device to which it is to be securely attached such that in one embodiment it essentially comprises the shape and form of a bulldog clip.

It is a further object of the present invention to provide an improved secure wireless communications platform, which in one embodiment comprises an enclosing structure with a movable arm, which can open and lock closed around a device to which it is to be securely attached wherein the closing mechanism is fully integrated with the wireless platform such that a processing function running on the platform supervises the status of the locking mechanism.

It is a further object of the present invention to provide an improved secure wireless communications platform, which in one embodiment comprises an enclosing structure with a movable arm, which can open and lock closed around a device to which it is to be securely attached wherein the closing mechanism is fully integrated with the wireless platform such that the status of the moveable arm can be remotely interrogated by a telecommunications message such as SMS, MMS or EMS.

It is a further object of the present invention to provide an improved secure wireless communications platform, which in one embodiment comprises an enclosing structure with a movable arm, which can open and lock closed around a device to which it is to be securely attached wherein the closing mechanism is fully integrated with the wireless platform such that encoded mobile telecommunications messages may be used to securely lock the arm such that only authenticated messages from authorised persons enable the arm to be unlocked.

It is a further object of the present invention to provide an improved secure wireless communications platform, which in one embodiment comprises an enclosing structure with a movable arm, which can open and lock closed around a device to which it is to be securely attached wherein the closing mechanism is fully integrated with the wireless platform such that the status of the moveable arm can be reported back in the form of a telecommunications message such as via SMS, MMS or EMS, either in response to a request or automatically in response to an alarm condition.

It is a further object of the present invention to provide an improved secure wireless communications platform, which in one embodiment comprises an enclosing structure with a movable arm, such that the wireless platform comprises a removable wireless module and battery wherein each is integrated by way of the processing function with the enclosing structure and the status of the moveable arm such that the wireless module and or battery may not be removed unless the said arm is unlocked.

It is a further object of the present invention to provide an improved secure wireless communications platform, which in one embodiment comprises an enclosing structure with a movable arm wherein, the locking mechanism is electromechanical.

It is a further object of the present invention to provide an improved secure wireless communications platform, which in one embodiment comprises an enclosing structure with a movable arm wherein, the locking mechanism is mechanical.

It is a further object of the present invention to provide an improved secure wireless communications platform, which in one embodiment comprises an enclosing structure with a movable arm, such that the locking mechanism may comprise an additional mechanical barrel lock of rotary wheels, each bearing the integers 1 to 9, such that only the correct alignment of numbers will enable the barrel lock to open.

It is a further object of the present invention to provide an improved
secure wireless communications platform which may make use of a wireless
platform operating according to any of the mobile telecommunications
standards such as GSM, GPRS, CDMA, WCDMA, PHS, PDS, wherein the
5 said platform comprises a loudspeaker and microphone or a port for an
audio-voice headset and or a GPS module

It is a further object of the present invention to provide an improved
secure wireless communications platform, which comprises either a single
10 call button, or two call buttons, each of which protrude within the void
enclosed by the arm such that each is protected from damage.

It is a further object of the present invention to provide an improved
secure wireless communications platform, which in one embodiment
15 comprises an LCD display and or light emitting fibre display and or a light
emitting polymer display on its outer surface with a button at either end of
the screen such that incoming messages are shown in the display and, for
calling purposes, a different caller's number can be displayed and scrolled
20 backwards and forwards by pressing either of the two buttons respectively
to access the said numbers from a stored memory wherein, the display
shows the current number which will be called when the call button is
pressed.

It is a further object of the present invention to provide an improved
25 secure wireless communications platform, which in one embodiment
comprises an LCD display and or a light emitting fibre display and or a light
emitting polymer display on its outer surface such that personalised
stationary and or animated emoticon images can be displayed.

30 It is a further object of the present invention to provide an improved
secure wireless communications platform, which in one embodiment
comprises an LCD display and or a light emitting fibre display and or a light
emitting polymer display on its outer surface and has stored in an internal
35 memory a number of animated or stationary emoticon images, wherein each
image comprises an associated code such that each stored emoticon image
can be selected and displayed by selecting the coded number.

It is a further object of the present invention to provide an improved
secure wireless communications platform, which in one embodiment

comprises an LCD display and or a light emitting fibre display and or a light emitting polymer display on its outer surface and has stored in an internal memory a library of animated or stationary emoticon images, wherein each image comprises an associated code such that one or more of the emoticon images are displayed when the said communications platform receives an SMS, MMS or EMS type message comprising one or more of the said codes.

It is a further object of the present invention to provide an improved
10 secure wireless communications platform, which in one embodiment
comprises an input/output port, and has stored in an internal memory a
library of animated or stationary emoticon images, wherein different
libraries of image elements can be downloaded from Internet web pages to
the communicator platform by way of the said input/output port.

15 It is a further object of the present invention to provide an improved
secure wireless communications platform, which in one embodiment
comprises an input/output port, and has stored in an internal memory a
library of animated or stationary emoticon image elements, wherein
20 different libraries of image elements can be sent to the wireless platform by
sending an SMS, MMS or EMS type message.

It is a further object of the present invention to provide an improved
25 secure wireless communications platform, which in one embodiment
comprises an input/output port, and has stored in an internal memory a
library of animated or stationary emoticon image elements, wherein a
different library or subset of image elements can be sent to the wireless
platform by sending the Internet web address of the location where the
30 library of emoticon images are stored and cause the platform to download
and display the said image elements.

It is a further object of the present invention to provide an improved
secure wireless communications platform, which in one embodiment
comprises an internal memory storing a library of animated or stationary
5 emoticon image elements, and a set of display commands which actively
control the movement, colour, hue, size, screen location, and such like
characteristics of each emoticon element, wherein the display of the
platform can be personalised in exciting ways.

It is a further object of the present invention to provide an improved
10 secure wireless communications platform, which in one embodiment
comprises an internal memory storing a library of animated and or stationary
emoticon image elements, and a set of display commands which actively
control the movement, colour, hue, size, screen location, and such like
characteristics of each emoticon element, wherein the display can be user-
15 programmed to show rapidly moving bands of changing colour and of
changing shape and or alphanumeric characters.

It is a further object of the present invention to provide an improved
secure wireless communications platform, which in one embodiment
20 comprises an LCD display and or a light emitting fibre display and or a light
emitting polymer display on its outer surface and an input/output port, and
has stored in an internal memory a library of animated or stationary
emoticon image elements, and a set of display commands which actively
control the movement, colour, hue, size, screen location, and such like
25 characteristics of each emoticon element, wherein incoming calls can be
linked to the display of emoticon elements and commands to cause images
to be generated on the display.

It is a further object of the present invention to provide an improved
30 secure wireless communications platform, which in one embodiment
comprises an infrared communications port such that information, which
controls the emoticon image elements can be received by the said infrared
port and thereby cause the emoticon image shown on the display of the
platform to change.

It is a further object of the present invention to provide an improved secure wireless communications platform, which in one embodiment comprises an infrared communications port such that information which 5 controls the emoticon image elements can be sent by the platform to a second platform and thereby cause the emoticon image shown on the display of the second platform to change.

It is a further object of the present invention to provide an improved 10 secure wireless communications platform, which in one embodiment comprises a separate wrist-worn infrared control module, wherein a push button display on the said control module communicates commands to the platform via infrared light such that the platform can be caused to communicate with another platform via infrared light, or send a 15 telecommunications message, or make a call to a selected number shown in the display of the wrist-worn control module.

It is a further object of the present invention to provide an improved 20 secure wireless communicator, which in different embodiments may comprise two moveable interlocking arms, integrated with the structure of the wireless communicator, which open and close together around a void enclosed by the arms to enable a flexible means of connecting the secure communicator to a rigid object such as a bicycle frame.

25 It is a further object of the present invention to provide an improved secure wireless communicator, which in different embodiments may comprise one or more moveable clips, integrated with the structure of the wireless communicator, which open and close around a raised rigid or flexible element, wherein said raised element forms part of a surface of a 30 casing or article of clothing or device to which the communicator is to be attached.

It is a further object of the present invention to provide an improved 35 secure wireless communicator, which in different embodiments may be locked securely to a raised rigid or flexible element, wherein said rigid or flexible element is attached to fabric or plastic or metal by means of a chemical bonding agent.

It is a further object of the present invention to provide an improved secure wireless communicator, which in different embodiments may be locked securely to a raised rigid or flexible element, wherein said rigid or flexible element is attached to fabric or plastic by means of a backing plate comprising one or more protruding pins which pass through the back surface of the said fabric or plastic or metal and lock securely to the reverse side of the said raised rigid or flexible element, thereby integrating the backing plate with the said rigid or flexible element.

10 It is a further object of the present invention to provide an improved secure wireless communicator, which in different embodiments may be locked securely to a raised rigid or flexible element, wherein said rigid or flexible element is attached to fabric or plastic by means of a backing plate comprising one or more magnets which attract magnetic surfaces of 15 opposite polarity through the back surface of the said fabric or plastic and lock securely to the reverse side of the said raised rigid or flexible element, thereby integrating the backing plate with the said rigid or flexible element.

20 It is a further object of the present invention to provide an improved secure wireless communicator, which in different embodiments may comprise three or more interlocking arms, integrated with the structure of the wireless communicator, which open and close together around a void enclosed by the arms to enable a flexible means of connecting the secure communicator to a rigid object.

25 It is a further object of the present invention to provide an improved secure wireless communicator, which in different embodiments comprises one or more light-emitting diodes and or light emitting fibres and or light emitting polymers on its outer surface, which can emit light of different 30 colours and in different pulse sequences according to the current status of the secure communicator such as the status of idle mode, active mode, mobile cell field strength coverage level, battery charge level and such like.

It is a further object of the present invention to provide an improved
5 secure programmable communicator having direct application to hikers and
mountaineers or skiers in difficulty wherein each such person has a smart
clothes user-programmable communications tag which comprises the means
to attach itself to their clothing, which is pre-programmed to be linked with
a fixed or mobile telephone wherein it comprises a single call button for
10 communication with a central alarm point and has the capability to establish
voice communication and or transfer data messages comprising a current
GPS coordinate and or a voicemail message to a destination subscriber
number of a fixed or mobile phone or to an IP address.

It is a further object of the present invention to provide an improved
15 secure programmable communicator, which in one embodiment comprises
the means to lock itself securely to an electronics games console and be
integrated with the said console such that it can extend the capability of the
games console by adding a wireless telecommunications and or a GPS
capability, which can form the basis of a new game concept, wherein the
20 secure programmable communicator may also be designed to slot into an
existing port in the console.

25 It is a further object of the present invention to provide an improved
secure programmable communicator, which in one embodiment comprises
the means to lock itself securely to an electronics games console which
accepts plug-in games modules, wherein the said communicator may
partially or completely comprise the shape of one of the plug-in games
30 modules and form the basis of a new game concept.

It is a further object of the present invention to provide an improved
35 secure programmable communicator, which in one embodiment comprises
an integral part of a portable games console such that it provides the basis
for a game based upon exchanging GPS locations with other players in the
game, wherein if one player correctly predicts the GPS position of another
player at a future time within a given resolution, that other player is
removed from the game.

It is a further object of the present invention to provide a system and method for an improved secure programmable communicator which enables the communicator device to register itself automatically to an existing mobile phone subscription using messages sent from the mobile phone associated with said subscription.

Other objects and advantages of this invention will become apparent from the description to follow when read in conjunction with the accompanying drawings.

10 **BRIEF SUMMARY OF THE INVENTION**

Certain of the foregoing and related objects are readily attained according to the present invention by the provision of a novel secure programmable communicator system and method, which in different embodiments serves to address the diverse requirements of attaching a wireless communications device and or positioning device to clothing or to sports equipment or to a rigid structure such as a bicycle or freight container, or to a games console, as well as providing the means to activate the device and charge it to an existing mobile phone subscription.

The secure programmable communicator comprises a wireless platform contained within a secure housing comprising one or more moveable arms or securing elements, which lock together around an object, or raised surface element, to which the communicator is to be attached. In different embodiments the platform may comprise a processing function, which continuously supervises the integrity of the locking mechanism.

For child and sports applications, in one embodiment the secure programmable communicator may essentially comprise the form of a climber's carabiner safety clip, which may easily be attached to equipment such as a rucksack or a bicycle frame.

For phone to fabric applications and for inventory tagging, the secure programmable communicator may integrate with a rigid or flexible surface element, which is attached to the fabric or forms part of the inventory casing. In different embodiments, the rigid or flexible surface element may be chemically bonded directly to the fabric or casing, or it may be attached to a backing plate which sandwiches the fabric between the said plate and said surface element using pins, or magnets or such like. In other phone to fabric embodiments, the said backing plate may use magnets or interlocking pins and integrate directly with the back surface of the said communicator structure thereby sandwiching the fabric directly between the backing plate and the communicator itself.

For games console applications, the secure programmable communicator can be moulded to integrate with the console games-module input port and communicate with the games console operating system and thereby bring a telecommunications and GPS capability together with locked-down calling functionality to the games console. In addition, new and exciting games can be developed for the games console, which combine remote GPS coordinates and telecommunications capability.

In different embodiments, the secure programmable communicator platform may comprise an LCD or light emitting fibre or light emitting polymer display and comprise a memory module to store a library of emoticon image elements and commands such that user-programmable emoticons can be created on the device. Telecommunications messages and or an infrared input/output port can be used to transmit and receive emoticon image elements and commands to and from other similar devices, which can cause the emoticon images to change accordingly.

In one embodiment, the phone-to fabric communicator may be controlled by a wrist-worn control panel, which comprises a keypad and display to select phone numbers or to write messages or to select emoticon image elements, wherein the wrist-worn control panel communicates with the communicator using infrared light such that it may control the emoticon display and send and receive messages and make and receive calls.

Other objects and features of the present invention will become apparent from the following detailed description considered in connection with the accompanying drawings, which disclose several embodiments of the invention. It is to be understood, however, that the drawings are designed for the purpose of illustration only and that the particular description of the chosen applications of the secure programmable system and method are given by way of example only and do not limit the scope of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

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FIG. 1 illustrates an image of the child communicator and sports person communicator according to the present invention.

FIG. 2 illustrates a schema showing one embodiment of the components of the secure programmable communicator platform.

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FIG. 3 illustrates an alternate image of the child communicator and sports person communicator according to the present invention.

FIG. 4 illustrates an alternate image of the child communicator and sports person communicator according to the present invention.

20

FIG. 5 illustrates a schematic of one method to activate the secure programmable communicator and to register it automatically to an existing mobile phone subscription according to the present invention.

FIG. 6 illustrates a games console integrated with a plug-in secure programmable communicator platform.

25

FIG. 7 illustrates an image of a different embodiment of the secure programmable communicator platform integrated with a backing plate for attachment to clothing.

DESCRIPTION OF A PREFERRED EMBODIMENT

Referring now in detail to the drawings and in particular to FIG. 1 thereof, therein illustrated are four images of the external form of the secure programmable communicator according to one embodiment of the present invention.

The following description makes reference to the detailed features and applications as outlined in the objects of the invention.

In the embodiment shown, the programmable secure communicator (10) comprising a wireless telecommunications platform, is designed in the form of a climber's carabiner safety clip such that it can provide a secure means of attaching a telecommunications device to a rucksack or bicycle frame and comprise a fashionable shape such as that of an extreme sports icon. In this way a child would be willing and eager to wear such a device.

The secure programmable communicator (10) comprises an extended fixed arm (15) and a moveable arm (20), which can move inwards, as shown, around an axis joint (80). The axis joint (80) may be spring-loaded, to ensure that the moveable arm (20) is closed in the rest position. A secure locking mechanism (30) comprising a rotating sleeve can move up or down according to the direction that the sleeve is rotated. When the sleeve is rotated and moved down, the locking arm (20) can move out of the closed position and into the void (60) that is enclosed by the fixed arm (15) and the moveable arm (20).

A speakerphone (40) provides basic voice and audio communication. An LED display (50) comprising different colours can indicate the status of the device such as active mode, idle mode, out of base-station coverage area, and such like. A call button (70) protrudes into the void (60) enclosed by the fixed arm (15) and the moveable arm (20). The call button may be used to phone a number or to answer an incoming call.

The moveable arm (20) makes contact with a sensing element (90), which is supervised by a processing function running on the wireless telecommunications such that the locking mechanism (30) can be enabled or disabled by the processing function. The processing function can itself in turn be controlled by telecommunications messages.

The battery for the device is contained behind a panel (100). At the base of the device are shown a battery recharge port (110) and a telecommunications port (120) for connecting a separate audio headset and 5 or for connecting the device to a computer for optionally changing the subscriber numbers to which the secure communicator can call or be allowed to receive calls from.

With reference now to FIG. 2, the schematic shows the functional 10 elements of the secure programmable communicator (10). Incoming telecommunications messages and phone calls are received by the antenna (210) and processed by the wireless platform module (220). The wireless platform module (220) is linked to a system-processing module (250), which receives data from a heat sensor (300), a lock sensor (290), and the 15 GPS module (260). The GPS module comprises a standard baseband correlator and processes GPS positional coordinates from data received via the antenna (270).

A memory module (280) stores processed information and previously 20 calculated GPS coordinates with reference to real-time clock data generated by the system-processing module (250).

Telecommunications messages can be generated by a message 25 generation means (240), which may receive data from the system-processing module (250). A battery (230) powers the device.

The secure programmable communicator has a number of interfaces according to the different embodiments of the invention. An LED or light-emitting polymer or light-emitting fibre display and call selection means 30 (310) is connected to the wireless platform module (220). An infrared light port (320) can send and receive data and communicate this to the memory (280) via the wireless platform module (220).

An interface means (400) may comprise suitable interfaces according to 35 the application of the communicator such as interface (120) shown in FIG.1.

A ring tone generator (330) can generate ring tones to alert the wearer of the device of incoming calls. Alternatively, or in addition, incoming calls can change the images on the display and call selection means (310).

With reference to FIG.3 is shown an alternative embodiment of the secure programmable communicator in the form of a carabiner clip, wherein the surface comprises a ring fibre display (55) and two call buttons (75).

5 The ring fibre display (55) may comprise several rings of fibre, which can generate light of different colours according to the status of the communicator such as active mode, idle mode, low battery power and such like.

10 With reference to FIG. 4 is shown a variant of the carabiner clip design for the secure programmable communicator wherein the moveable arm is now in the reverse direction. In addition, the display and call selection means (310) shows two scrolling buttons (315) at either end of the display, wherein the user may scroll through different subscriber numbers by 15 pressing either of the two scroll buttons (315). If the user presses one of the call buttons (75), the secure communicator dials the number shown in the display window.

20 On the surface of the device is shown an infrared send/receive port (337), which can be used to send image data to and receive image data from local infrared devices.

25 A key part of the invention is the method, which enables a secure programmable communicator to be purchased in a high street store and activated to be linked to an existing mobile phone subscription. This method is highly suitable to the application of the secure programmable communicator for children and for elderly persons.

30 The secure programmable communicator contains a SIM card, which is a programmable microcircuit, which is pre-programmed to link it directly to a particular mobile operator. It is proposed that the said communicator could be activated and linked to any existing mobile phone subscription and therefore each would be sold already containing one SIM card, in numbers proportional to the market share of the different mobile operators, thereby 35 making it possible for subscribers from different networks to purchase and activate the device accordingly.

Unlike a normal mobile phone, in one embodiment suitable for children, the communicator cannot receive calls from mobile numbers, which are not stored internally in its memory. In addition, it can only make calls to numbers pre-programmed into its memory. For this reason there is no risk to the operator if the devices have their batteries fully charged and 'ready-to-go' in the store since they may not be used unless they are activated.

In the following description the term Child Communicator is used to emphasise the use of the secure programmable communicator as a suitable communications means for children, although the activation method may be equally suitable for SIM card activation for general applications such as in telematics or utility reading where devices contain SIM cards.

In one embodiment of the activation method, the Child Communicator is sold with its subscriber number and SIM ID code on a printed card. The Child Communicator is easily activated when it receives an SMS message containing its own SIM card's unique ID code (often referred to as the PUK code) from a mobile phone sending its own number when calling (a standard user selectable preset). The SMS software verifies the PUK code is correct, identifies the number of the caller, and then programs this into the Child Communicator's own memory now linked to the single key press.

In normal circumstance, for security purposes, the operator generally keeps the knowledge of the PUK code secret from the subscriber and it is only provided when needed to reactivate a locked mobile phone (following 3 successive wrong PIN number entries): Moreover, the PUK number is usually only provided after the identity of the caller has been authenticated. In this way, the misuse of stolen mobile phones is reduced. The situation is different for the Child Communicator since the access and the use of the device is directly linked to an existing mobile phone subscription. Correspondingly the use of the Child Communicator will be automatically charged to the account of the mobile phone, which according to the method of this invention, is used to activate the device. For this reason the storeowner can sell the Child Communicator with the SIM PUK code of the device's SIM card printed on a card and stored within the packaging.

In one embodiment, the plug and play sequence is as follows:

1. Open the packaging and take out the Child Communicator and read its phone number and SIM PUK code.
2. Send an SMS to the Child Communicator's phone number containing only the SIM PUK code and a customer preference PIN separated from the SIM PUK code by a # from the mobile phone whose account will be charged for the calls made by the Child Communicator.

Example: If the Child Communicator phone number is 040 123 4567, and the SIM PUK code is 876543210 and the purchaser's phone number is 0408884444, then the purchaser sends the SMS: [876543210#1234] to subscriber number 040 123 4567, in own-number sending mode from 0408884444.

3. According to the present invention, in this embodiment, the Child Communicator comprises activation software running on it to identify and confirm its own SIM PUK code from an incoming message and is pre-programmed to send a message to the sender to confirm the designation of the PIN code as 1234.
4. The PIN and or SIM PUK code will be used subsequently to authenticate and prioritise stored subscriber numbers.
5. Consequently, the Child Communicator will identify the calling subscriber number as 0408884444 and send a pre-programmed message comprising this subscriber number of the activating mobile phone, together with the received PUK code as means of authentication, to the charging and billing centre to the operator of mobile subscriber 0408884444.
6. Software at the operator's charging and billing centre will automatically add the Child Communicator's call costs and message costs to the charge account of the activating subscriber, i.e. to the account of 040 8884444.

35 The activation method described above is shown in FIG. 5.

DESCRIPTION OF A SECOND PREFERRED EMBODIMENT

With reference to FIG. 6 is shown a games console comprising a plug-in
5 secure programmable communicator platform. In this embodiment the plug-
in module comprises the capability to dock securely with the games console
and may comprise the identical shape as a plug-in games module. In this
way the communicator can integrate with the games console and extend the
capability of the console to become a fully functional telecommunications
10 device. Furthermore, the added capability makes possible the design and
development of new games, which make use of telecommunications
messages and GPS position coordinates.

In the same way that games consoles are designed to accept new games
15 cartridges or games modules, the secure programmable communicator
platform will preferably slot into an existing port in the console. The
input/output port of the communicator is also designed to communicate with
the operating system of the games console such that it can make use of the
20 audio-visual display capability already within the console. Additionally, the
communicator may make use of the power supply of the console itself.

To enable the games console to communicate via the
telecommunications network, the software on the communicator platform
generates a subscriber number display (610) on the games console itself,
25 which can be controlled by the games console rocker (600). Buttons A and
B can be used to activate and deactivate calls. It is intended that only pre-
programmed numbers would be available for the telecoms-enabled console
to call.

30 In a separate embodiment the secure programmable communicator
platform may comprise a memory module containing a library of animated
or stationary emoticon image elements, and a set of display commands
which actively control the movement, colour, hue, size, screen location, and
such like characteristics of each emoticon element. By sequentially selecting
35 an emoticon image element and relating this to one or more display
commands, the user may make use of the library of elements and set of
commands to design a personalised emoticon for the display.

5 Additional libraries of emoticon image elements may be downloaded via the Internet or received via telecommunications messages or via data calls or via the infrared communications port. In addition, the user may transmit personalised emoticons to other devices or receive emoticon images from other devices using telecommunications messages or via the infrared communications port (640).

10 Phone calls may be received on the games console by making use of the console loudspeaker (635) and an in-built microphone. Alternatively, a headset port (630) may be used to connect a headset directly to the secure programmable communicator platform.

DESCRIPTION OF A THIRD PREFERRED EMBODIMENT

15 With reference to FIG. 7 is shown a third embodiment of the secure programmable communicator, which can attach to a raised rigid or flexible element (770) wherein said raised element forms part of a surface of a casing or article of clothing or device to which the communicator is to be attached.

20 In one embodiment, the secure communicator platform comprises the essential telecommunications capability and a display and call-selection means (310) and scroll buttons (315). The said platform is attached to the raised element (770) by way of press-in clips (710). At the rear of the 25 communicator platform is a quick-release slider (730) so that a SIM card (760) can be easily swapped in and out of the communicator platform. It is anticipated that the user may want to put in the SIM card from an existing mobile phone, if a second SIM card is not available.

30 This embodiment is ideally suited to a person visiting a nightclub who may spend time on the dance floor. The communicator platform is then securely attached to the chest area of a tee shirt, for example, and calls can be made to numbers stored on the SIM card. The communicator platform comprises a small speakerphone (780), which can be used for audio-voice 35 communication. Alternatively, a headset port (795) can be used to plug in a headset.

The raised element (770) may be chemically bonded to the fabric Alternatively, a rear backing plate (720) may be used to sandwich the fabric (790) between the backing plate (720) and raised element (770). The backing plate may comprise protruding pins and or magnetic elements to lock the raised element securely to the article of clothing. Magnets may be preferable if the user wishes a non-permanent means to secure the programmable communicator platform to an article of clothing.

To adapt the programmable secure communicator to outside conditions in the instance that a sports enthusiast would wear it, the secure programmable communicator is provided with a rain cover (740).

With particular emphasis upon fashion and with direction towards the youth culture who enjoy recreational clubbing, the secure programmable communicator platform may comprise a memory module containing a library of animated or stationary emoticon image elements, and a set of display commands which actively control the movement, colour, hue, size, screen location, and such like characteristics of each emoticon element. By sequentially selecting an emoticon image element and relating this to one or more display commands, the user may make use of the library of elements and set of commands to design a personalised emoticon for the display. Additional libraries of emoticon image elements may be downloaded via the Internet or received via telecommunications messages or via data calls or via the infrared communications port. In addition, the user may transmit personalised emoticons to other devices or receive emoticon images from other devices using telecommunications messages or via the infrared communications port (750).

Software modules running on the secure programmable communicator platform may be used to send emoticon images to other communicator devices in the vicinity, wherein these communications may be controlled directly by the wrist-worn control pad.

With reference to all the embodiments described earlier, the present disclosure is for the purpose of illustration only and does not include all modifications or improvements, which may fall within the scope of the appended claims.

CLAIMS:

1. A system and method for a secure programmable communicator comprising an extended arm and a moveable arm wherein the extended arm and moveable arm enclose a void such that the said communicator forms a communicator in the form of a climber's carabiner clip.
2. A system and method for a secure programmable communicator comprising two moveable arms such that the said communicator forms a communicator in the form of a bulldog clip.
3. A system and method for a secure programmable communicator comprising a moulded form, which enables the said communicator to plug into a games-console games-module port and thereby add the capability of telecommunications and position determination to the console.
4. A system and method for a secure programmable communicator comprising two moveable clips such that it can be attached to a rigid or flexible element which itself forms part of the surface of a container or which is bonded to the surface of a fabric.
5. A system and method for a secure programmable communicator which enables it to be linked to an active mobile phone subscription by sending coded messages to the said communicator and thereby causing the call and message charges of the communicator to be charged to the account of the activating mobile phone.

30

35

SYSTEM & METHOD FOR A SECURE PROGRAMMABLE COMMUNICATOR

ABSTRACT

A system and method for a secure programmable communicator is described which can provide the basis for an improved child communicator, an improved sports person communicator, as well as providing a telecommunications capability to a games console plug-in. In one embodiment, the secure programmable communicator platform is integrated with an enclosing structure comprising a movable arm to embody the essential design of a climber's carabiner safety clip making possible that the device can be securely locked to an article of clothing, or to a rucksack, or to a rigid structure such as a bicycle, or to inventory casing. In different embodiments, the platform comprises a display and a memory containing a library of emoticon image elements, which can be exchanged by telecommunications messages and or by infrared light thereby providing the means to personalise the display and to share emoticons with similar devices.

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FIG. 1

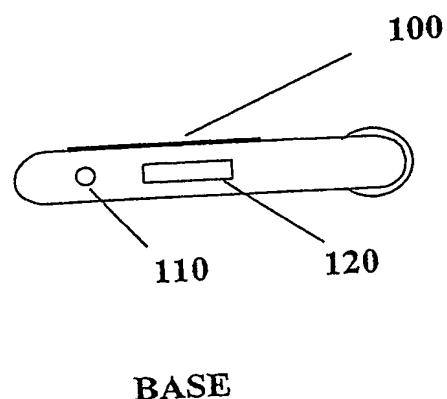
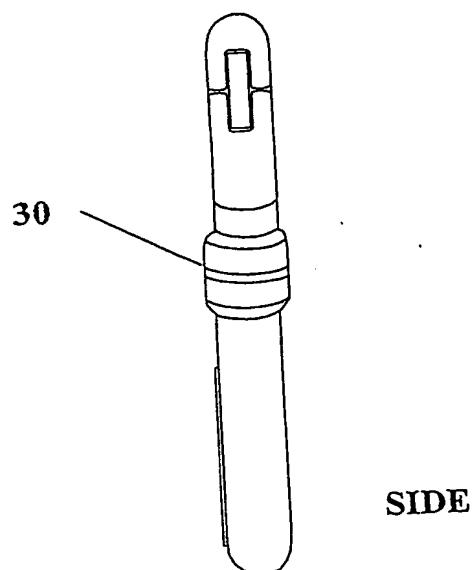
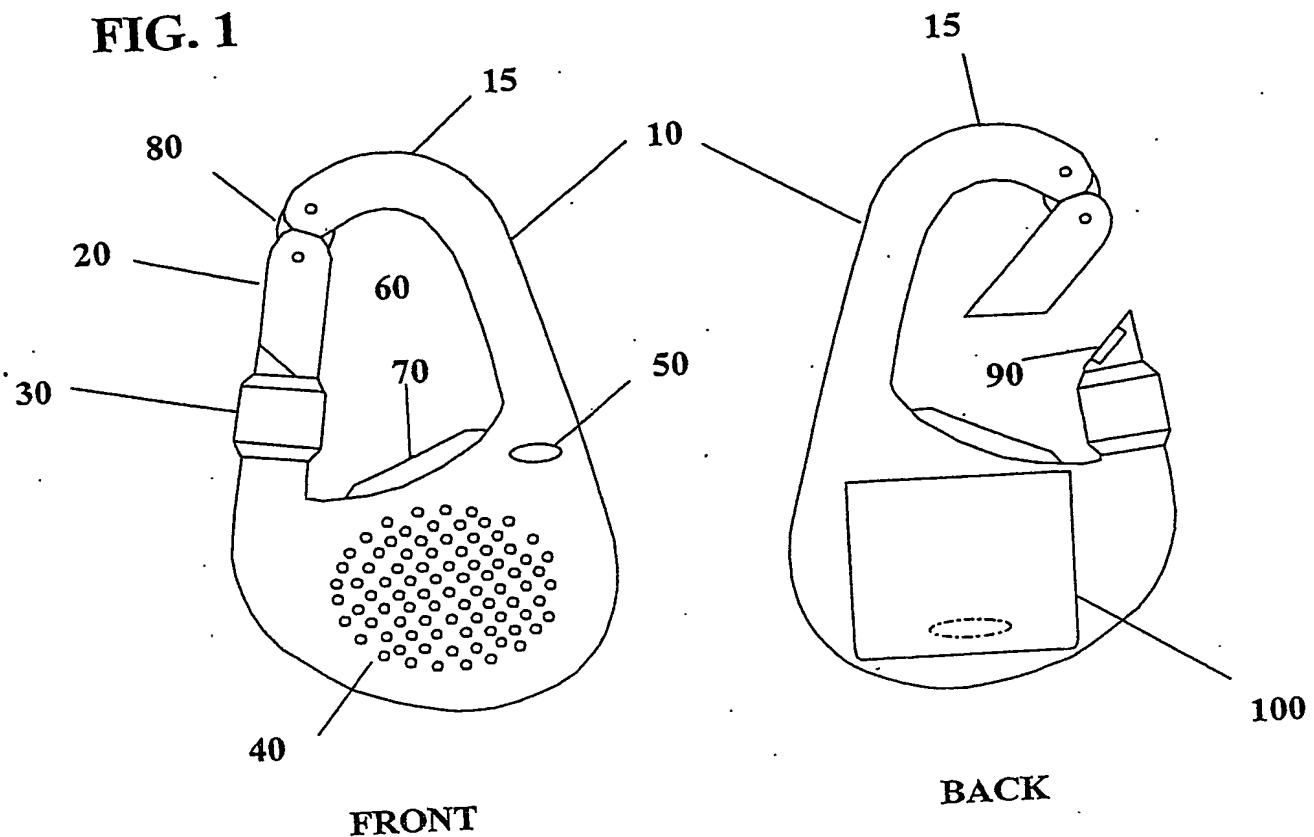
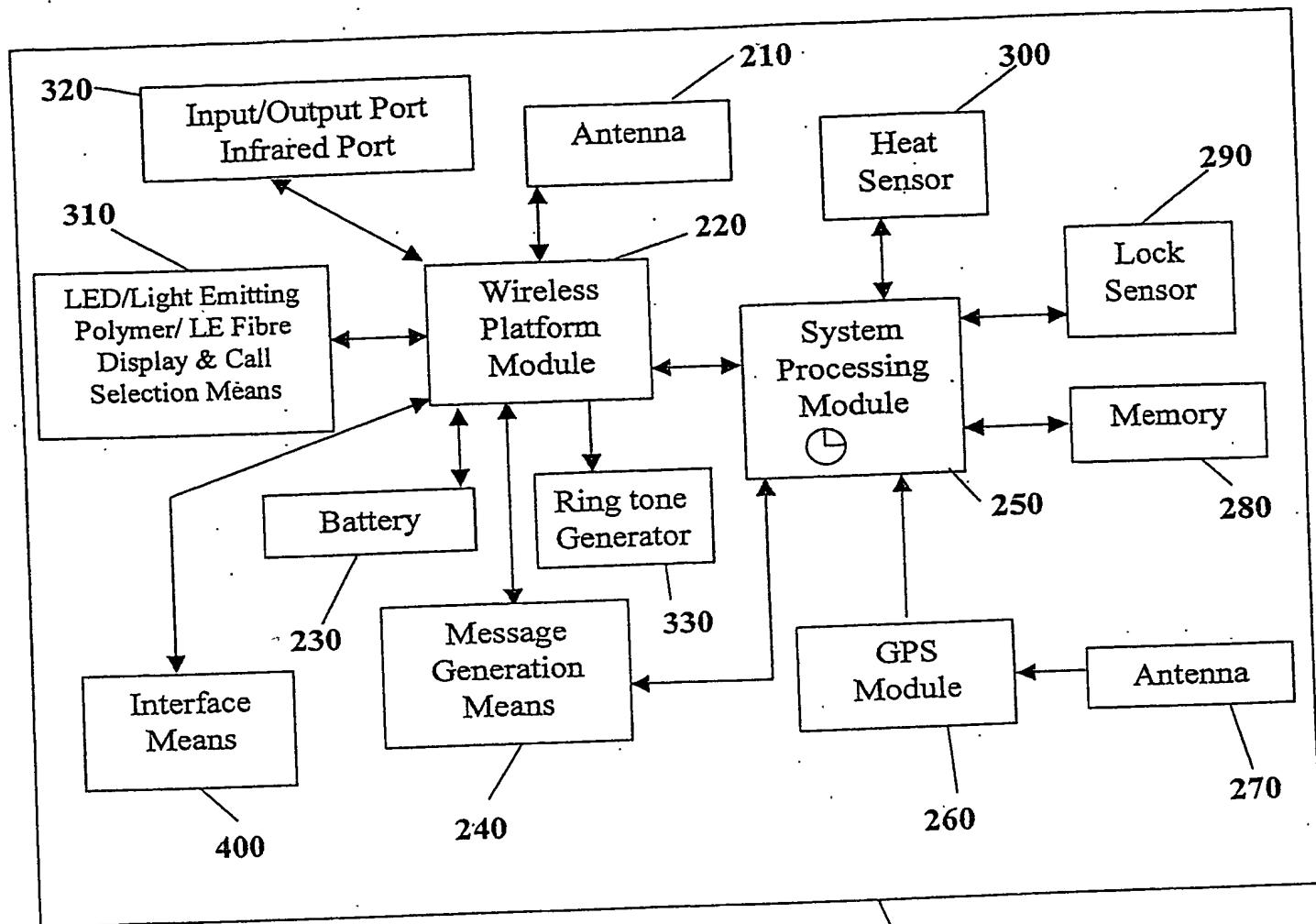
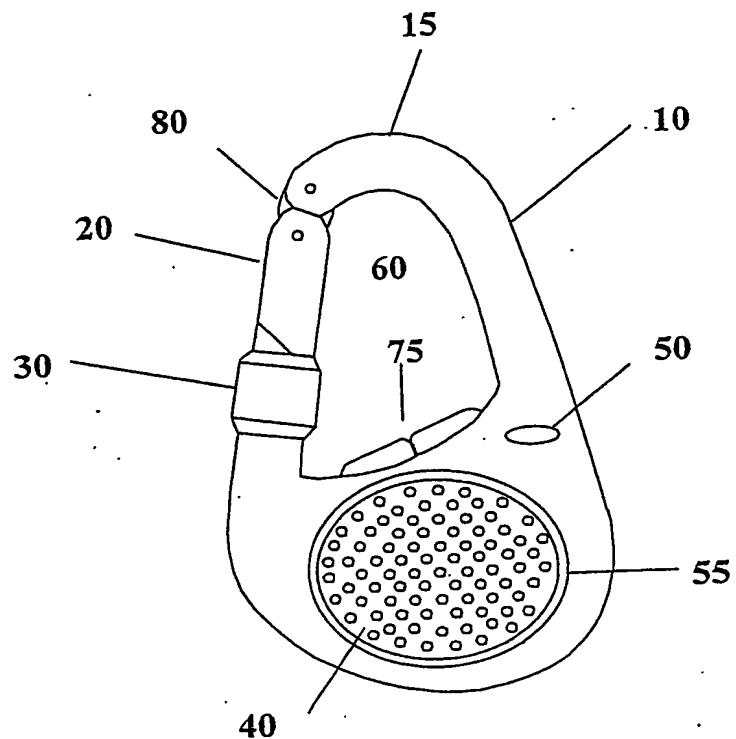


FIG. 2



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FIG. 3



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FIG. 4

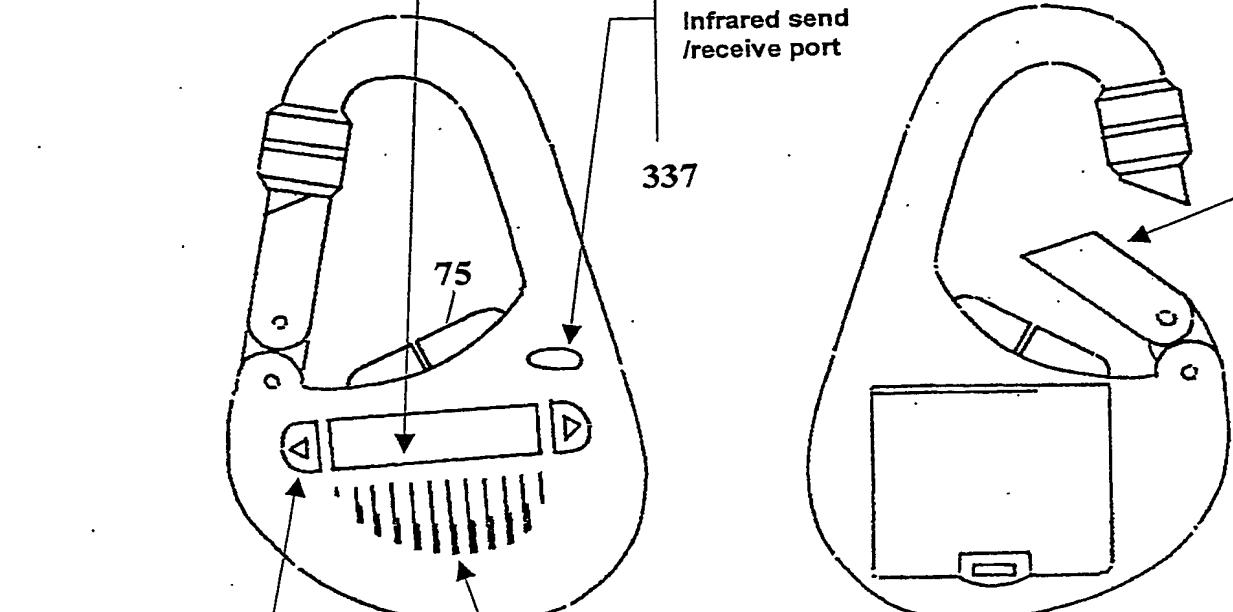
310

Colour or black & white screen for
scrolling through embedded
telephone numbers

Infrared send
/receive port

337

Alternate
clip
mechanism



Scroll buttons
to select
numbers

315

Speaker design – with hidden
microphone

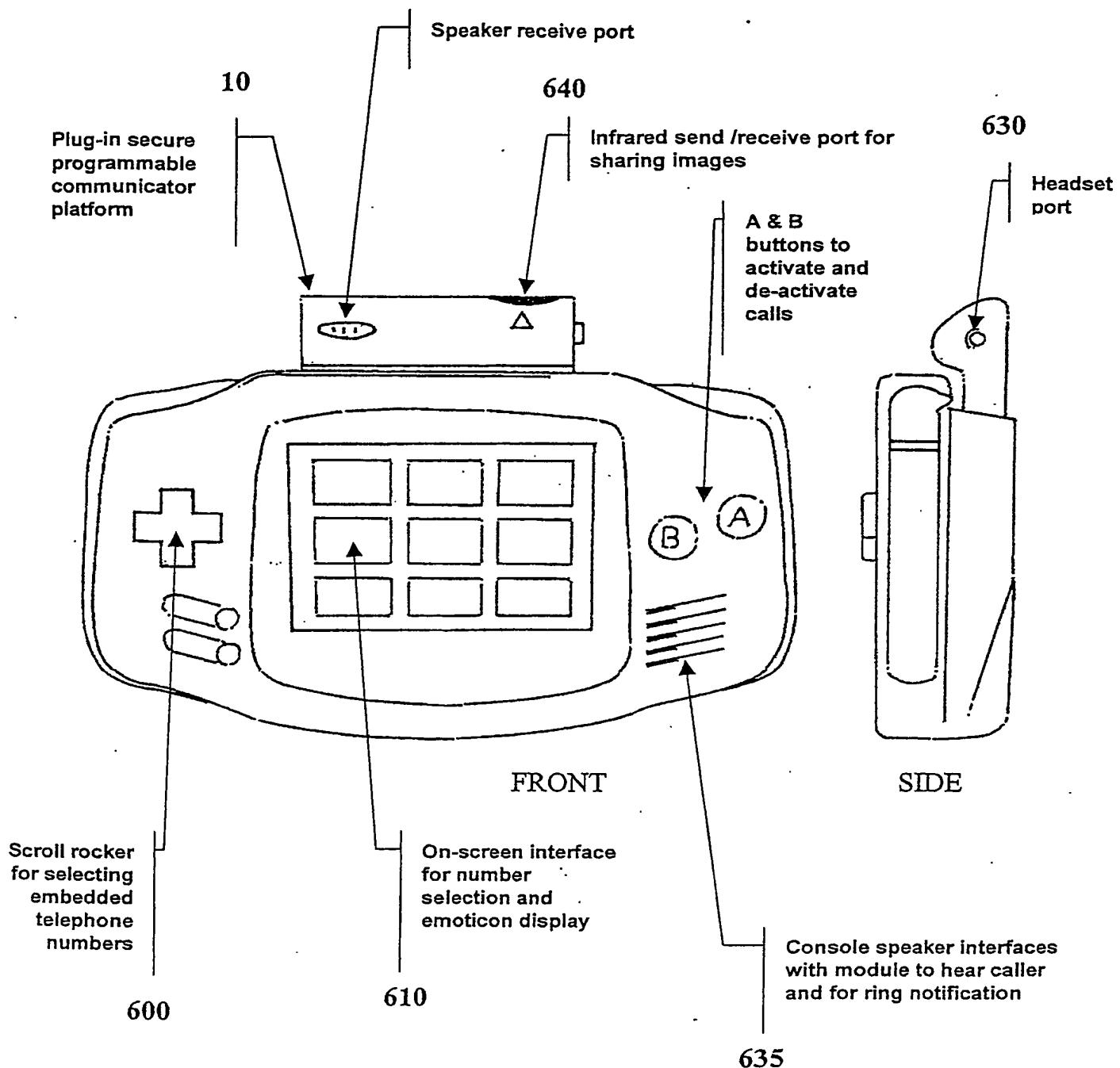
40

FIG. 5

- 1 The Subscriber Number of the Secure Programmable Communicator SIM Card is noted.
- 2 The SIM PUK code of the Secure Programmable Communicator SIM Card is noted.
- 3 The Active Mobile Phone is set to 'own number sending' mode.
- 4 A Telecoms message is sent to the subscriber number of the Secure Programmable Communicator together with its SIM PUK code and a 4 character PIN code from the active mobile phone.
- 5 The Secure Programmable Communicator comprises activation software running on it and is able to identify and confirm its own SIM PUK code from an incoming message and is pre-programmed to send a message to the sender to confirm the designation of the PIN code.
- 6 The Secure Programmable Communicator identifies the subscriber number of the activating mobile phone and sends a pre-programmed message comprising this number and its own PUK code to the charging and billing account of the activating mobile phone.

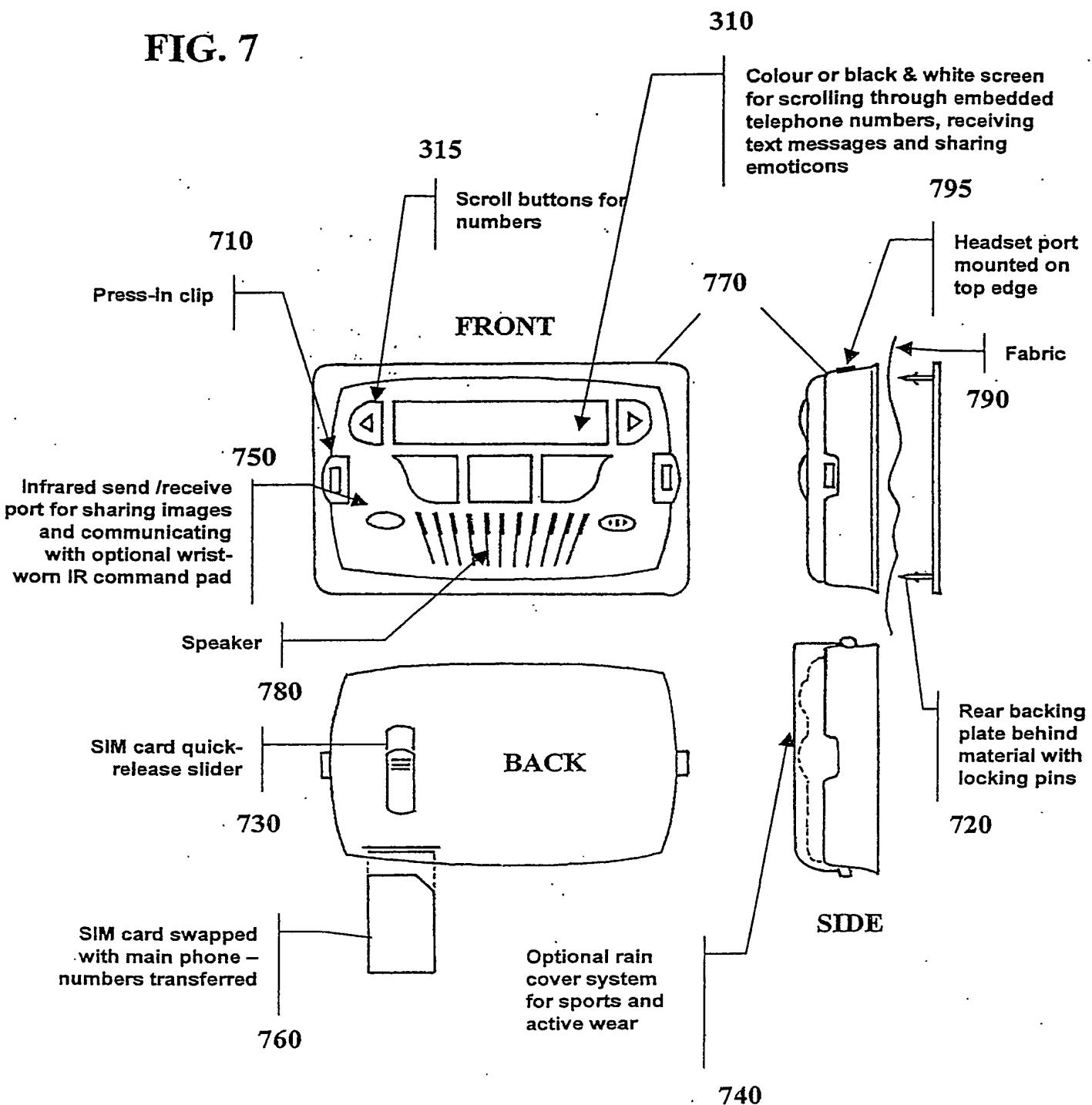
6/7

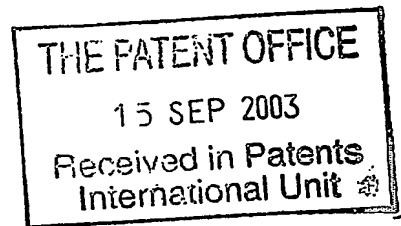
FIG. 6



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FIG. 7





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